Protein (2010 Dietary Guidelines Advisory Committee):

Overview, Needs for Future Research

Overview:

For the first time, the 2010 Dietary Guidelines Advisory Committee (DGAC) included a chapter focusing solely on the relationship between protein and health. Most of the questions addressed in this section are new topics not previously addressed by a DGAC. Recent literature has begun to examine the relationship between protein source and health outcomes. The Committee addressed this topic in three separate questions:

- Animal protein products
- Vegetable protein
- Vegetarian vs. animal-based diets.

Protein-related food groups were also considered:

- Milk and milk products
- Cooked dry beans and peas.

These food groups are significant protein sources in the American diet, and they also are important sources of other nutrients.

For each question considered in this section, the following general criteria applied. With minor exceptions noted in the review of each question, all study designs were originally included in the searches, but cross-sectional studies were later excluded from the review if there was sufficient evidence from studies with stronger designs. Also original research articles included insystematic reviews or meta-analyses were not included as individual articles in the review, so as not to count the study twice.

Finally, the Committee excluded studies that considered only participants diagnosed with chronic disease, hyperlipidemia, hypertension (HTN) and related health conditions. The Committee reviewed evidence from January 2000 to 2009. Because the 2005 DGAC reviewed the topic of milk and milk products, the 2010 Committee agreed with those recommendations and provided here only an updated review of evidence from June 2004 to 2009.

Needs for Future Research:

1. Develop standardized definitions for vegetable proteins and improve assessment methods for quantifying vegetable protein intake to help clarify outcomes in epidemiologic studies in this area.

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- **Rationale:** Assessing vegetarian eating patterns and their protein content is complex and current methodologies do not capture critical variations. Therefore, investigators' ability to quantify any possible association with health benefits is limited. Better standardized definitions and improved assessment methods will improve the ability to quantify health benefits associated with consumption of vegetable protein.

2. Develop better methods of conducting cohort studies of populations consuming plant-based diets compared to animal-based diets, including defined classifications of vegetarian and "near vegetarian" eating patterns and more specific impacts of dried beans and peas on health.

- **Rationale:** Large US cohorts do not include enough vegetarians and vegans to make comparisons on health outcomes including weight control and blood pressure (BP). Widespread public interest and possible public health impacts of this dietary pattern raise the priority for this research.

3. Conduct studies of potential limitations of plant-based diet for key nutrients, including calcium, iron, vitamin B_{12}, and protein quality, especially in children and the elderly.

- **Rationale:** These data are needed to determine whether vegan children require dietary supplements to attain adequate nutrient status and growth.

4. Examine the role of dairy products in lipid profiles, especially through intervention trials in which all types of dairy products, both low- and high-fat, are fed. Bioactive components that alter serum lipid levels may be contained in milk fat.

- **Rationale:** Consumption of milk products may not have predictable effect on serum lipids, weight control and metabolic syndrome. The ability of dairy consumption to increase HDL levels and their effect on weight gain or weight loss and metabolic syndrome is also of widespread public health interest and worthy of additional study.

5. Develop and investigate potential biomarkers for objective assessment of vegetable protein intake.

- **Rationale:** Few measures of protein status exist in healthy subjects, so it is difficult to compare protein status of participants in cohort studies with diverse protein intakes.

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Acknowledgements

6. Develop better assessment tools to classify vegetarian patterns in epidemiologic studies.

- **Rationale:** No assessment methods are currently available to classify participants into the wide range of vegetarian eating patterns.

7. Conduct randomized controlled trials (RCTs) to answer the question whether intake of dairy products alters BP.

- **Rationale:** Results from prospective studies are inconsistent and suggest that many other variables that affect BP, such as weight loss and other nutrients, will make associations difficult to determine.

8. Ensure that prospective cohort studies continue to track the association between intake of dairy products and metabolic syndrome.

- **Rationale:** Evidence to date does not suggest that high-fat dairy products are more likely than low-fat dairy products to induce metabolic syndrome. Whether there are other protective compounds in milk products, such as calcium, protein, fatty acids, and so on, that provide protection requires further research.